

REMARKS

Summary of the Office Action

Claims 1, 4, 5, 7 and 9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,873,196 to Hoffmann et al. (“Hoffmann”) in view of U.S. Patent No. 5,459,121 to Shin et al. (“Shin”).

Summary of the Response to the Office Action

Applicants have amended claim 1.

Claims 2 and 3 are withdrawn from consideration.

Claims 6 and 8 are canceled.

Claims 1, 4, 5, 7 and 9 are submitted for reconsideration.

All Claims Define Allowable Subject Matter

Claims 1, 4, 5, 7 and 9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hoffmann in view of Shin. Applicants respectfully traverse the rejection under 35 U.S.C. § 103(a). Applicants have amended claim 1 to provide a different recitation relating to Applicants’ invention. Claim 1 recites a method of introducing a substance into plant tissue of a plant having branches, including removing branch tissue to expose conductive tissue of a branch, contacting the exposed conductive tissue of the branch with the substance, and increasing an amount of the substance that is absorbed through the conductive tissue of the branch by inhibiting means being carried out in order to inhibit transpiration through a leaf on the branch or to inhibit water

requirement by the leaf, such that a driving force of transpiration provides a flow of the substance into the conductive tissue.

By way of example, as described at paragraph 0022 and illustrated in Fig. 1 of Applicants' specification, removal of the leaves 1 from plant 10 restricts normal substance migration through the original vessels 9 of the side branch 2a of the plant **in the direction from the main stem 3 to the side branch 2a**, such that the driving force of transpiration from the leaves 1 on the side branch 2b produces a flow of substances **from the side branch 2a to the main stem 3** (the solid arrow lines in Fig. 1). The flow results in absorption of the substance 20 through the exposed vessels 9. Since substance migration in the sieve tubes 8 is already from the side branch 2a toward the main stem 3, the sieve tubes 8 also conduct migration of the substance 20 from the side branch 2a to the main stem 3. Therefore, it is possible to more reliably incorporate the substance 20 into the tissue of the plant 10 in a high introduction volume.

Hoffmann is directed to an implantable device for the administration of active substances to plants. As background, at col. 1, ll. 14-31, Hoffmann describes that the operating principle of prior art implantable devices consists in the fact that the release of the active substance is effected as a result of its solubilization and is therefore controlled by the water absorption of the plant. This controlling mechanism has the disadvantage that since the active substance is released according to the water absorption, the release rates are determined by the hydration state of the plant's tissue cells at the site of application. Previous experience has shown that the degree of cell hydration is subject to great variations, and that the extent of these variations depends on the water balance state of the plant. Extremely low or extremely high water

potentials of the plant cells can result either in an interruption of the active substance release or in a rapid release involving an undesired premature exhaustion of the system.

In this regard, Applicants respectfully submit that the water balance state of a plant is a well known physiological characteristic of plants. However, the mere description of this well known physiological characteristic of plants in the background portion of Hoffmann does not in any manner teach or suggest the features of “increasing an amount of the substance that is absorbed through the conductive tissue of the branch by inhibiting means being carried out in order to inhibit transpiration through a leaf on the branch or to inhibit water requirement by the leaf, such that a driving force of transpiration provides a flow of the substance into the conductive tissue,” as recited in claim 1.

At col. 1, line 55 – col. 2, line 24, Hoffmann goes on to describe that it is the object of the alleged Hoffmann invention to provide an implantable device for the administration of active substances to plants, **wherein the connection of active substance release with the water balance of the plant is limited to a minimum.** The subject matter of Hoffmann is an implantable device for supplying active substances to plants in the form of a molded article that is interspersed with pores in which the active substance is distributed. The pore volume at the time of implantation is dimensioned in a particular manner as described throughout the detailed specification of Hoffmann, with emphasis on the type and magnitude of the total porosity, i.e., volume, size and scattering as well as distribution of the pores. Hoffmann discloses that since desired amounts of active substances are to be incorporated into the porous cavity system of the ceramic article, **the above-mentioned parameters are decisive for the active substance release. The alleged advantage of the Hoffmann device lies in the utilization of its pore**

system as a driving and controlling force in the active substance release. This makes it possible to separate the active substance release from the water balance of the plant to a large extent.

Because Hoffmann seeks to control active substance release independent of the water balance of the plant, Applicants respectfully submit that Hoffmann teaches away from “increasing an amount of the substance that is absorbed through the conductive tissue of the branch by inhibiting means being carried out in order to inhibit transpiration through a leaf on the branch or to inhibit water requirement by the leaf, such that a driving force of transpiration provides a flow of the substance into the conductive tissue,” as recited in claim 1. Inasmuch as Hoffmann so clearly teaches away from Applicants’ invention, the combination of Hoffmann and Shin, or any other conceivable reference, to arrive at Applicants’ invention is improper.

Regardless, Applicants respectfully submit that Shin fails to overcome the above-described deficiencies of Hoffmann for another reason. In particular, Shin fails to teach or suggest at least the features of “increasing an amount of the substance that is absorbed through the conductive tissue of the branch by inhibiting means being carried out in order to inhibit transpiration through a leaf on the branch or to inhibit water requirement by the leaf, such that a driving force of transpiration provides a flow of the substance into the conductive tissue,” as recited in claim 1. Shin is merely directed to a method for reducing plant water loss by closing stomatal openings and reducing the transpiration rate.

Accordingly, it is requested that the rejection under 35 U.S.C. § 103(a), of claims 1, 4, 5, 7 and 9 be withdrawn, and the claims allowed.

CONCLUSION

In view of the foregoing, Applicants submit that the pending claims are in condition for allowance, and respectfully request reconsideration and timely allowance of the pending claims. Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicants' undersigned representative to expedite prosecution. A favorable action is awaited.

EXCEPT for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. § 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account No. 50-0573. This paragraph is intended to be a **CONSTRUCTIVE PETITION FOR EXTENSION OF TIME** in accordance with 37 C.F.R. § 1.136(a)(3).

Respectfully submitted,

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